# RINGKASAN

Analisis Perbandingan Metode *Certainty Factor*, Dempster Shafer dan Teorema Bayes pada Sistem Pakar dalam Mendeteksi Gangguan Kesehatan Mental

Novanka Veldasari

Kesehatan adalah kebutuhan setiap individu dalam menjalani kehidupan. Kesehatan adalah hal yang sangat penting, karena tanpa kesehatan yang cukup, maka setiap individu akan sulit dalam melaksanakan aktivitasnya sehari-hari.Pertumbuhan penduduk yang semakin meningkat baik di perkotaan maupun diperdesaan menuntut peningkatan layanan kesehatan yang memadai. Hal tersebut menuntut penyidaan layanan kesehatan agar mudah diakses dan memadai. Masih banyaknya masyarakat yang belum menyadari betapa pentingnya kesehatan mental dan juga banyaknya stigma buruk yang diberikan kepada penyintas gangguan kesehatan mental memberikan dampat buruk pada kesadaran masyarat akan penyakit mental. Salah satunya masyarakat takut untuk mengunjungi tenaga ahli dibidang kesehatan mental seperti psikologi dan psikiater.

Maka dari itu, penelitian ini dilaksanakan agar dapat membantu pendiagnosaan dini terhadap gangguan kesehatan mental agar dapat segera ditangani dengan baik, dengan menganalisa metode *Certainty Factor*, *Dempster-Shafer*, dan Teorema Bayes dengan menggunakan sistem pakar dan diimplentasikan dengan website. Sistem pakar sering digunakan dalam membantu mendeteksi penyakit seperti program bernama MYCIN yang merupkan program interaktif untuk melakukan pendiagnosaan penyakit meningitis dan infeksi bacremia dan memberikan rekomendasi bagaimana cara terapi antimikrobia. Metode *Certainty Factor*, *Dempster-Shafer*, dan Teorema Bayes nantinya dapat digunakan untuk mengukur tingkat keyakinan pakar dan nilai probabilitas pada suatu gejala untuk dapat mengukur nilai kemungkinan seseorang menderita gangguan Kesehatan Mental, sehingga dapat mengetahui metode mana yang paling tepat digunakan.

Berdasarkan penelitian, *Certainty factor* memiliki tingkat kemungkinan yang paling akurat dibandingkan dengan Teorema Bayes dan *Dempster-Shafer*. Pada penelitian ini, *Dempster-Shafer* memiliki beberapa kekurangan yang berkebalikan dengan pendiagnosaan langsung oleh pakar. Dari hasil analisa perhitungan studi kasus perhitungan menggunakan metode Certainty Factor memiliki nilai probabilitas paling tinggi dibandingkan dengan metode Dempster-Shafer dan Teorema Bayes, yaitu 99,4%. Kemudian disusul dengan Dempster-Shafer dengan nilai probabilitas sebesar 94% dan terakhir metode Teorema Bayes dengan nilai probabilitas sebesar 81.65%. Maka pengimplementasian dilakukan dengan hanya dua metode saja yaitu *Certainty Factor* dan Teorema Bayes. Pada Pengujian Usability juga didapat hasil pengguna cukup puas dengan website Sistem Pakar Gangguan Kesehatan Mental dengan Metode *Certainty Factor* dan Teorema Bayes dengan tingkat keberhasilan sebesar 80.68%.

Kata kunci: Sistem Pakar, *Certainty Factor*, *Dempster-Shafer*, Teorema Bayes, Kesehatan Mental.

# SUMMARY

## Comparative Analysis of Certainty Factor, Dempster Shafer and Bayes Theorem Methods on Expert Systems in Detecting Mental Health Disorders

Novanka Veldasari

*Health is the need of every individual in living life. Health is very important, because without adequate health, every individual will find it difficult to carry out their daily activities. The increasing population growth both in urban and rural areas demands an increase in adequate health services. This requires the provision of health services to be easily accessible and adequate. There are still many people who do not realize how important mental health is and also the amount of bad stigma given to survivors of mental health disorders has a bad impact on public awareness of mental illness. One of them is that people are afraid to visit experts in the field of mental health such as psychology and psychiatrists.*

*Therefore, this research was carried out in order to assist in the early diagnosis of mental health disorders so that they can be handled properly, by analyzing the Certainty Factor, Dempster-Shafer, and Bayes theorem methods using an expert system and implemented with a website. Expert systems are often used to help detect diseases such as a program called MYCIN which is an interactive program to diagnose meningitis and bacremia infections and provide recommendations on how to treat antimicrobials. Certainty Factor, Dempster-Shafer, and Bayes Theorem methods can later be used to measure the level of expert confidence and probability values on a symptom to be able to measure the probability that a person suffers from mental health disorders, so that they can find out which method is the most appropriate to use.*

*Based on the research, Certainty factor has the most accurate probability level compared to the Bayes Theorem and Dempster-Shafer. In this study, Dempster-Shafer has several shortcomings that are in contrast to direct expert diagnosis. From the analysis of the case study calculations, the calculation using the Certainty Factor method has the highest probability value compared to the Dempster-Shafer method and the Bayes theorem, which is 99.4%. Then followed by Dempster-Shafer with a probability value of 94% and finally the Bayes theorem method with a probability value of 81.65%. So the implementation is done with only two methods, namely Certainty Factor and Bayes theorem. In the Usability Test, the results also showed that users were quite satisfied with the website of the Mental Health Disorders Expert System with the Certainty Factor Method and Bayes Theorem with a success rate of 80.68%.*

*Keywords: Expert System, Certainty Factor, Dempster-Shafer, Bayes Theorem, Mental Health.*